

ABSTRACT OF THE DISCLOSURE

[0081] A heat sink (20) comprises a heat sink monolith (23) and a cover (22). The heat sink monolith (23) comprises a thermal transfer plate (25) and a wire mesh structure (26). The thermal transfer plate (25) of the monolith (23) and the cover (22) cooperate to define a heat transfer chamber (24). The wire mesh structure (26) of the monolith (23) is configured and positioned in the chamber (24) to provide a tortuous, heat conduction path for fluid (e.g., a coolant) which turbulently travels from an inlet (40) of the chamber to one or more outlets (42) of the chamber (24). The wire mesh structure comprises wires which are fused by diffusion bonding (rather than by soldering) into a mesh. The diffusion bonding of the wires provides the wire mesh structure with many and appropriately sized interstices, making it easier to push the fluid through the heat sink assembly and thereby significantly reducing the size and power of the pump which pushes the fluid. Preferably the diffusion bonded wire mesh structure is integral with or diffusion bonded to the thermal transfer plate. Within the chamber the diffusion bonded wire mesh (26) structure can have various configurations for providing an exposure interface between fluid pumped through the chamber and the diffusion bonded wire mesh.